

STANDARDS DEVELOPMENT BRANCH OMCE



36936000010250

W.Q. LIB
MAGNETAWAN R. (2)



THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF MAGNETAWAN

DISTRICT OF PARRY SOUND

TD
380
.M34
1968
MOE

JANUARY 1968

VILLAGE OF MAGNETAWAN - 1968
DISTRICT OF PARRY SOUND

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca

TD
380
.M34
1968

Report on a water pollution
survey of the village of
Magnetawan, district of Parry
Sound.

80400

Report

on a

Water Pollution Survey

of the

VILLAGE OF MAGNETAWAN

District of Parry Sound

January 1968

District Engineers Branch

Division of Sanitary Engineering

INDEX

<u>SECTION</u>	<u>PAGE NO.</u>
INTRODUCTION	1
I GENERAL	1
(1) Location	1
(2) Drainage	2
II WATER SUPPLY	2
(1) Water Supply	2
(2) Recreational	2
III WATER POLLUTION	2
(1) Sanitary Waste Disposal	2
(2) Refuse Disposal	3
IV SURFACE WATER DRAINAGE	3
V DISCUSSION OF WATER QUALITY	4
VI DISCUSSION	5
VII SUMMARY	6
VIII RECOMMENDATIONS	6
APPENDICES	
TABLES	
MAP	

R E P O R T

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

The purpose of this survey was to locate and record significant sources of water pollution within the Village of Magnetawan. Surveys of this nature are conducted throughout the Province of Ontario by the Ontario Water Resources Commission to form a basis for evaluating any existing or potential sources of pollution. Where these sources are noted, recommendations concerning their abatement are made to the parties concerned.

In addition to the sampling of surface waters and drainage outfalls, two private well water samples were taken in order to make a general comparison of ground-water and surface-water qualities.

Where water and water pollution control works appear desirable or expansions to present facilities are necessary, the Commission has a programme to aid in the construction and financing of these works.

The appendices to this report are a tabulation of the surface-water and well-water sample results, and a map of the village showing the surface-water sampling locations.

I GENERAL

(1) Location

The Village of Magnetawan lies on the Magnetawan River between Cecebe Lake and Beaver Lake at the junction of highways 510

and 520. According to the 1967 Municipal Directory, Magnetawan has an assessed population of 223.

(2) Drainage

Drainage is provided by the Magnetawan River which traverses the village in a northwesterly direction.

II WATER SUPPLY

(1) Water Supply

Water is obtained from private drilled and dug wells and from the Magnetawan River. There are approximately 14 wells serving residences in the village, with the remaining obtaining their water from the river. Most of the river water is used without treatment.

(2) Recreational

The river is used for swimming, fishing and boating. During the summer months, the locks and swing bridges on the river permit the passage of cruisers from Parry Sound upstream as far as Burk's Falls. The Marina areas within Magnetawan are kept busy throughout the summer servicing and supplying the tourists and summer cottagers in the area.

III WATER POLLUTION

(1) Sanitary Waste Disposal

The disposal of domestic sewage is on a private basis, the main method being the septic tank and underground disposal bed. Privies and cess-pools are used in some instances.

The effective installation and operation of the septic tank systems is severely hampered by the shallow overburden, the frequency of rock outcroppings and the close proximity of the buildings in the main section of the village. The malfunctioning of septic tanks has resulted in the pollution of ditches and unsanitary conditions, which could result in private well pollution. The Village of Magnetawan is not suited to effective sewage disposal by individual septic tank systems.

(2) Refuse Disposal

Refuse from the village is disposed of at a refuse disposal site located on property rented by the village. The site is on Lot 3, Concession 6, Township of Croft. At present a burn and cover method is used to dispose of the garbage.

The site is sufficiently isolated from surface water to prevent pollution, and providing the present method of operation is continued no ground-water impairment appears imminent.

IV SURFACE WATER DRAINAGE

Drainage within the village is directed by means of open ditches and storm drains. One drain on Spark Street runs to Bidy Street immediately to the north of the intersection and then discharges to the river in the vicinity of Daley's Lumber Mill (see the appended map). It is reported that premises on Spark Street and Bidy Street discharge their laundry wastes to these drains. The remainder of the village is drained to ditches by short drainage

conduits and culverts, which discharge to the river. The laboratory results confirm excessive pollution of the drainage conduits.

V DISCUSSION OF WATER QUALITY

Samples were collected from the Magnetawan River, drainage ditches and storm sewer outfalls. The results of the laboratory analyses are contained in Table I. The appended description of the significance of the laboratory tests will enable the interpretation of the recorded results.

The data on the bacterial quality of the Magnetawan River shows progressive change as the river advances through the built-up section of the village. This condition has probably arisen as a result of the influence of the pollution evident at the outfalls and open ditches.

The results of the laboratory analyses of the drinking water supplies, river, drilled and dug wells are appended (Table II). The shallow well showed coliform contamination probably due to ineffective sewage disposal, while the deeper drilled well did not contain coliform organisms.

Although several samples for comparative analyses would be more representative, the topography and related sewage disposal problems makes the provision of a potable water supply from shallow wells in this area impractical.

The results of the chemical analyses were in the anticipated range for surface and ground-water supplies. The incidence of

coliform organisms in all of the river samples confirms the necessity of a minimum treatment of chlorination of all surface water prior to use as a domestic supply.

VI DISCUSSION

The provision of a commercial sewerage system is the ultimate solution to the sewage problems in the village. The lack of assessment and financial limitations of the village may delay the installation of a treatment facility. However, the control of sewage discharge on an individual basis by the most effective methods available is an immediate necessity. It is apparent that discharge of laundry wastes to the most convenient storm drainage outlet is extensive. In some instances minor alterations would enable the disposal of this sewage in the existing septic tank system or some other underground disposal method. Where these alterations are possible, care should be taken in construction so as not to overload existing systems or present an additional threat to private wells. The municipality should assume a more rigid control of septic tank installations and pass enforceable regulations to prevent the discharge of contaminating waste to municipal storm drains. An active interest in water pollution control by municipal authorities in order to encourage offending parties to provide better methods of sewage disposal should be initiated.

VII SUMMARY

A water pollution survey was undertaken in the Village of Magnetawan by the Ontario Water Resources Commission. The field investigations were made June 29, 1967 and September 28, 1967.

At present, the open ditches and the storm sewers have been directing the effluent from malfunctioning septic tanks and laundry drains to the Magnetawan River. Local conditions are unsuitable for effective septic tank construction and operation. However, temporary remedial measures as previously outlined would alleviate the problems.

VIII RECOMMENDATIONS

1. The Village of Magnetawan should institute a water pollution control programme to locate and eliminate, where possible, the discharge of polluting wastes from municipal and private storm drains.

2. The municipality should undertake a study to determine the possibility of providing a communal water pollution control facility.

/elc

Prepared by:

D.J. Currie
D.J. Currie, Technician-
Sanitary Engineering,
Div. of Sanitary Engineering.

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

A Bacteriological Examination

Bacteriological examinations were performed on samples from the watercourses. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm blooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as M.F. Coliform count per 100 ml.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

B Chemical Analysis

The chemical analysis performed on stream and outfall samples included determinations for biochemical oxygen demand, suspended solids and in some instances turbidity.

(1) Biochemical Oxygen Demand (BOD)

Biochemical oxygen demand is reported in ppm and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters or industrial wastes. The completion of the test requires five days, under the controlled incubation temperature of 20°C.

The Commission's water quality objectives are (1) for stream water - a 5-day BOD of not greater than 4 ppm. (11) for storm sewer, sewage treatment plant and industrial waste discharges

- a 5-day BOD of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.

(3) Turbidity

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water or outfall discharges. It is an expression of the optical property of a sample and the results are reported in "Turbidity Units".

(4) Alkyl Benzene Sulfonate (ABS)

The alkyl benzene sulfonate portion of the anionic detergents is reported in parts per million. The test is generally employed to detect the presence of domestic wastes. The popular use of synthetic detergents for general cleaning purposes has resulted in the incidence of residual ABS in domestic waste discharges.

VILLAGE OF MAGNETAWAN

LABORATORY RESULTS - WATER POLLUTION SURVEY

TABLE NO. 1

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>M.F. Coliform Count Per 100 ML</u>
M-56.48	Magnetawan River downstream from Village.	June 29/67					5,600
M-56.64	Magnetawan River as indicated on map.	June 29/67					900
M-56.66	Magnetawan River as indicated on map.	June 29/67					1,300
M-56.71	Magnetawan River as indicated on map.	June 29/67					490
M-56.73	Mouth of Creek at Bay Street.	June 29/67 Sept. 28/67	1.0	54	2	52	1,700 730
M-56.74	Magnetawan River as indicated on map.	June 28/67					1,100
M-56.91	Magnetawan River as indicated on map.	June 28/67					280

TABLE NO. I (CONTD)

Sampling Point No.	Description	Date	5-Day	Solids		Diss.	M.F. Coliform	
			BOD (ppm)	Total (ppm)	Susp. (ppm)	(ppm)	Count 100	Per ML
M-56.96	Magnetawan River as indicated on map.	June 28/67						460
M-57.01	Magnetawan River as indicated on map.	June 29/67						200
M-57.04	Magnetawan River as indicated on map.	June 29/67						145
M-57.0	Magnetawan River as indicated on map.	June 29/67						480
M-57.20	Magnetawan River as indicated on map.	June 29/67						220
M-57.33	Magnetawan River as indicated on map.	June 29/67						120
M-57.35	Magnetawan River as indicated on map.	June 29/67						180
M-57.36	Magnetawan River as indicated on map.	June 29/67						350

TABLE NO. 1 (CONTD)

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	5-Day BOD (ppm)	Total (ppm)	<u>Solids</u>		M.F. Coliform	
					Susp. (ppm)	Diss. (ppm)	Count Per 100	ML
M-57.4	Magnetawan River as indicated on map.	June 29/67					450	
M-57.45	Magnetawan River as indicated on map.	June 29/67					460	

VILLAGE OF MAGNETAWAN

OUTFALLS TO MAGNETAWAN RIVER - WATER POLLUTION SURVEY

TABLE 2

<u>Sampling Point No</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>Anionic Detergents as ABS</u>	<u>M.F. Coliform Count Per 100 ML</u>
M-56.9D	Ditch at foot of Church Street.	June 29/67	412	6478	2836	3652	14.2	26,000,000
		Sept. 28/67	6.4	522	30	492	-	370,000
M-57.0D	Ditch across from B.A. Garage (Biddy Street).	June 29/67	20	260	88	172	1.4	21,000,000
		Sept. 28/67	412	516	184	332	-	5,500,000
M-57.05W	Storm sewer (Biddy Street).	June 29/67	115	1076	534	542	3.0	8,000,000
		Sept. 28/67	9.6	-	-	-	-	530,000
M-57.05D	Ditch beside Daley Bros. Mill.	June 29/67	365	640	202	438	16.6	2,100,000
		Sept. 28/67	No flow					
M-57.04D	Creek at Albert Street.	June 29/67	0.9	124	22	102		11,800
		Sept. 28/67	4.8	206	36	170		9,700

VILLAGE OF MAGNETAWAN

RIVER AND LOCAL WELLS - WATER POLLUTION SURVEY

TABLE NO. 3

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>Hardness as CaCO₃ (ppm)</u>	<u>Alkalinity as CaCO₃ (ppm)</u>	<u>Iron as Fe (ppm)</u>	<u>Chloride as Cl (ppm)</u>	<u>pH at Lab</u>	<u>M.F. Coliform Count Per 100 ML</u>
M-56.48	Magnetawan River as indicated on map.	June 29/67	24	8	0.45	2	7.6	5,600
	Private well - drilled well 200 feet.	June 29/67	144	109	0.34	11	7.2	0
	Private well - drilled well 20 feet.	June 29/67	164	132	0.15	14	7.1	50

